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**Notes:**

1. Untranslatable words are replaced with asterisks (\*\*\*\*).
2. Texts in the figures are not translated and shown as it is.

Translated 05:24:36 JST 02/09/2012

Dictionary: Last updated 01/13/2012 / Priority: 1. Proper nouns / 2. Medical/Pharmaceutical sciences / 3. Manufacturing/Quality

## **CLAIM + DETAILED DESCRIPTION**

### [Claim(s)]

[Claim 1]A method of processing a department mushroom of the agaric processing suspension containing a department mushroom of the agaric with a wet jet mill, and microatomizing the above-mentioned material.

[Claim 2]A method of processing a department mushroom of the agaric characterized by extracting an active ingredient in the above-mentioned material after processing suspension containing a department mushroom of the agaric with a wet jet mill.

[Claim 3][ by feeding a processed liquid with quantity pressure from at least two nozzles arranged by a hermetic condition, and making processed fluid collide and join by the downstream of this nozzle in a resisting pressure container as a wet jet mill ] The processing method according to claim 1 or 2 which uses equipment which emulsifies, distributes or crushes dispersoid in a processed liquid.

[Claim 4]The processing method according to claim 3 which promotes emulsification, dispersion, or spallation for dispersoid in a processed liquid by forming spiral jet flow by a collision and a merging section of a processed liquid.

[Claim 5]The processing method according to claim 3 or 4 make a processed liquid collide and join at not less than 50 m/sec in speed.

[Claim 6]Health food containing an active ingredient of a department mushroom of the agaric processed by one procedure of the Claims 1-5.

### [Detailed Description of the Invention]

#### [0001]

[Field of the Invention]This invention relates to the health food containing the department mushroom of the agaric obtained by the processing method for the ability to utilize more effectively the active ingredient contained in the department mushroom of the agaric (namely, AGARISUKU BURAZEI MURIRU), and this procedure.

#### [0002]

[Description of the Prior Art]If the department mushroom of the agaric is carried out, some are more various than before, and as for the active ingredient contained in each material, or its effect, many are already checked. And many procedures are proposed also about treatment of the trituration for utilizing these active ingredients more effectively, extraction, desiccation, etc.

[0003]The impact pulverizer represented with the grinding method by a pin mill and the hammermill as an example of representation of the processing method, Media type mills, such as a dry type jet mill using compressed air, a trituration type mill using a burstone mill principle, and a ball mill bead mill, the freeze crusher using ultra low temperature, and the other mills of various forms and structures are mentioned.

[0004] In the sampling process, the supercritical extraction by solvent extraction, such as extraction by water, micelle-ized extraction, and ethanol, a liquefied carbon dioxide, etc., etc. are used as a sampling process according to the kind of objective component. As a dry technique, a spray dryer, a pneumatic conveyor dryer, a drum type drier, a vacuum dryer, a freeze drying machine, etc. are mentioned.

[0005] However, mixing of the impurities from treating media is not avoided, or. [ the above-mentioned conventional processing method ] A loss and change in physical properties of an active ingredient happen by a processing stage, there is a problem that the active ingredient in a materials material is efficiently unutilizable etc., and a part of active ingredient will be in the status that it does not take in from problems, such as mouthfeel and gustation, unused or often.

[0006]

[Problem to be solved by the invention] When crushing the department mushroom of the agaric and microatomizing, [ an impact pulverizer, a dry type jet mill, a grinding-down-by-friction type mill a media type mill, and a freeze crusher which were listed previously ] There are merits and demerits and with the organization, form, a materials material, etc., 1) Mixing of the impurities by a collision or friction with 2 media which cannot perform sufficient atomization, or a lining substance is not avoided, 3) 4 which causes transformation by pyrexia — the loss of a component starts especially in a volatile component etc. — 5) When 6 very high treatment that a running cost is also high especially takes a long time to a power cost and it aims at atomization or cell spallation, the treatment efficiency per unit time becomes very low, 7) Since the handling on 9 work with 8 bad detergency with difficult continuous processing is not made to difficult 10 sealing system, it is 11 with the high possibility of mixing of a foreign body and saprophytic bacteria. Since equipment is large or weight is large, In each above-mentioned grinding apparatus, it has at least one or two or more problems — a setting position is restricted.

[0007] There is hydrophilic or an oleophilic component depending on the medium which cannot fully extract a component but is used for inefficient b extraction in a sampling process. When d active ingredient by which a loss and transformation of a component are not avoided when it is an active ingredient with low c thermal stability from which the component extracted differs is volatility, problems, like e continuous processing to which volatile loss happens is difficult, and occurs are pointed out.

[0008] This invention is made paying attention to the above situations, and the purpose tends to establish the technology in which they can be efficiently obtained as an atomization thing or an educt, regardless of how of the kind of department mushroom of the agaric, or the kind of component.

[0009]

[Means for solving problem] With the method of processing this invention which was able to solve the above-mentioned problem, process the suspension containing the department mushroom of the agaric with a wet jet mill, and the above-mentioned material is microatomized. Or after processing the suspension containing the department mushroom of the agaric with a wet jet mill, a gist exists in the place which extracts the active ingredient in the above-mentioned material.

[0010] [ as a wet jet mill used when enforcing a described method ] The thing of emulsification and the type distributed or crushed is preferably used in the dispersoid in a processed liquid by feeding a processed liquid with quantity pressure from two or more nozzles arranged by a hermetic condition, and making a processed liquid collide and join by the downstream of this nozzle in a resisting pressure container. If it carries out as [ make / at this time, carry out as / form / by the above-mentioned collision and merging section / spiral jet flow /, and also / a processed liquid / collide and join at not less than 50 m/sec in speed ], since emulsification of the dispersoid in a processed liquid, dispersion, or spallation is promoted further, it is desirable.

[0011] And according to the above-mentioned processing method, the department mushroom of the agaric can be obtained as a very detailed and stable thing. Or since the active ingredient contained

in the department mushroom of the agaric can be extracted at very high efficiency and a health food material with high intake efficiency to a human body can be obtained by extension, this health food is also contained in the object of this invention.

[0012]

[Mode for carrying out the invention] This invention is explained in detail below. Although the thing of \*\*\*\* and a wet type is known by the jet mill, it is indispensable to use a wet jet mill for attaining the purpose of this invention, and if the dry type jet mill was used, the purpose of this invention cannot be attained.

[0013]Namely, although particles are microatomized within a gaseous phase style by the collision with the particles of the quality of a processed material or particles, and a passage wall and a wet jet mill microatomizes particles within liquid phase flow on the other hand by the collision with the particles of the quality of a processed material or particles, and a passage wall, [ a dry type jet mill ] In the case of a wet jet mill, complex physics factors which are produced within a liquid phase in addition to atomization by the above-mentioned collision, such as a cavitation, a turbulent flow, shear, are also added, and atomization is promoted remarkably. As a grade of atomization, it is usually about 0.005–0.5 micrometer.

[0014]Generate high speed flow by the procedures that the wet jet mill used by this invention is arbitrary, and make the collision with fluid or fluid, and a passage wall cause, and. It is what names generically equipment provided with the mechanism which utilizes effectively a turbulent flow, shear, a cavitation effect, etc. which are produced by high speed flow, microatomizes the quality of a processed material, and promotes emulsification and dispersion, There is hyperbaric pressure homogenizer as such a wet jet mill, and there are a system which makes a processed liquid inject from a nozzle and is made to specifically collide with a stationary plate with a plunger pump, a rotary pump, etc. at high speed, and a system which makes the processed liquids injected collide from a transverse plane. And when passing a processed liquid passing through the inside of a pass at high speed, or colliding, the dispersoid which receives a turbulent flow and shear and is contained in processed fluid is ground, and. When depression release is carried out immediately after a collision, a cavitation effect arises, the spallation from the inside of the dispersoid takes place in response to the impact by rapid pressure discharge, and the dispersoid in a processed liquid is microatomized remarkably.

[0015]the type (APV gaulin company make --) which used the high speed injection by the BARUPU plate marketed as "quantity \*\* homogenizer" as such a wet jet mill The type which carries out a high-speed collision in passes formed in slit shape, such as made in Lanny, a product made by SOABI, and the NIPPON SEIKI CO., LTD. make (made in "Micro fluidizer" Mai Clough Rui Dicks), The type which carried out the phase about 90 degrees, which was made to open for free passage and which makes a high-speed collision cause in the pass of a single character, respectively (product made from a "nano mizer" nano mizer), The type which carries out the multiple-times development of the number of times of a collision of grain within the same nozzle (made by "nano makar" SG Engineering), The type (made by "Aqua" AQUATECH, Ltd.) which makes fluid collide within a flat passage element, or the type (made by the "Altima IZA" SUGINO machine company) which makes it inject to the room of an aspheric surface structure, and is made to collide from the orifice which counters is mentioned.

[0016]Although some differences are produced in the trituration / atomization effect, extraction efficiency, etc. of the department mushroom of the agaric, with the trait of device type, respectively, [ these wet jet mills ] It becomes possible to be able to obtain the stable atomization thing which atomization followed at high efficiency by leaps and bounds compared with the case where trituration and atomizing units including the conventional media type mill which was mentioned above are used, or to extract an active ingredient at high efficiency.

[0017]Therefore, although the type in particular of the wet jet mill used by this invention is not restricted, especially the desirable thing can mention especially the wet jet mill which is developed

by this people company and marketed as "JINASU PY."

[0018][ by this "JINASU PY" feeding a processed liquid into the nozzle installed by the hermetic condition in the resisting pressure container with quantity pressure, and forming spiral jet flow within this nozzle ] It is a wet jet mill of the type which emulsifies, distributes or crushes the dispersoid in a processed liquid, and it is as follows when the composition is explained briefly.

[0019]Three nozzles are installed by the hermetic condition in the resisting pressure container by this type of wet jet mill, After the nozzle and collision with which, as for these nozzles, liquid phase jet flow collides, respectively, It is constituted by the nozzle which forms high-speed spiral flow while maintaining jet flow, and the nozzle which performs a final adjustment while reducing the flow rate a little, Those nozzles are connected in series in a series of passes, and atomization of the dispersoid (department mushroom of the agaric) contained in a processed liquid in the pass of these series is performed.

[0020]If this type of wet jet mill is used, will microatomize this department mushroom of the agaric more efficiently by controlling temperature, tension, and passing time according to the kind of department mushroom of the agaric, the kind of active ingredient or the kind of CD, etc., and. An active ingredient can be eluted efficiently and component extraction can be performed.

[0021]The concrete composition of the wet jet mill marketed as \*\* "JINASU PY" is explained briefly hereafter, referring to Drawings.

[0022]Drawing 1 is the whole \*\*\*\* atomization system schematic structure figure about this wet jet mill and its peripheral apparatus, and drawing 2 is an important section explanatory view showing the composition of an atomizing unit, and, [ the atomization system 1 ] It has the containers 2 and 3 for storing processed liquids, such as suspension containing the department mushroom of the agaric, and after carrying out flow regulation of each processed liquid in these containers 2 and 3 with the valves 4 and 5, respectively, it is made to join for the piping 6, and it is supplied to the admission port of the high pressure pumping 7. The high pressure pumping 7 introduces the mixed-solution to the atomizing unit 8, after pressurizing about 10–150 MPa and forming high speed flow.

[0023]In this figure, the atomizing unit 8 is equivalent to the characterizing portion of the wet jet mill marketed as "JINASU PY", and specifically, [ the block in which the penetration hole which can pass the processed liquid which should be microatomized was formed ] Stick substantially and three pieces are allocated so that this penetration hole may meet the flow direction of the aforementioned processed liquid, A penetration hole to a fluid introducing side block at at least 2 and an intermediate block One. Form at least two in a fluid eccrisis side block, respectively, and, [ one block surface of the opposed faces of the aforementioned introductory side block and an intermediate block ] The grooved passage which it is open for free passage with the penetration hole provided in each adjoining block, and a processed liquid is changed into a counter current, and gives a turning stream is formed, [ one block surface of the opposed faces of an intermediate block and the aforementioned eccrisis side block ] It is open for free passage to the penetration hole of each adjoining block, and the flow of the processed liquid which passed the penetration hole of the aforementioned intermediate block is changed in the direction along the aforementioned block surface, and the grooved passage which attenuates the whirling force given to the processed liquid is formed.

[0024]The grooved passage formed in the introductory side block is equivalent to "the nozzle with which liquid phase jet flow collides", The penetration hole formed in the intermediate block is equivalent to "the nozzle which serves as high-speed spiral flow while maintaining jet flow after a collision", and the grooved passage formed in the above-mentioned eccrisis side block is equivalent to "the nozzle which reduces speed a little and performs a final adjustment."

[0025]And this type of wet jet mill has a mechanism which emulsifies, distributes and crushes the dispersoid contained in a processed liquid by feeding the three above-mentioned NOZURUHE processed liquids with quantity pressure, and generating spiral jet flow within a nozzle.

[0026][ namely the processed liquid which should be microatomized if such an atomizing unit 8 is

used ] When passing the penetration hole provided in each three blocks allocated by sticking substantially, Change into a counter current the flow of the processed liquid introduced from the aforementioned penetration hole of the fluid introducing side block, and give whirling force and it is made to collide. The flow is changed into the aforementioned passage direction, maintaining a turning state by the aforementioned penetration hole of an intermediate block, and it has composition which is made to decrease whirling force, changing the flow of the processed liquid which passed the aforementioned intermediate block in the direction which intersects perpendicularly with the aforementioned pass, and is made to discharge from a penetration hole in the eccrisis side block.

[0027]That is, as shown in drawing 2, this atomizing unit 8 sticks the disc-like disk 10 as a liquid introduction side block, the disc-like disk 11 as an intermediate block, and the disc-like disk 12 as an eccrisis side block in the cylindrical cup 9 in order of [ above-mentioned ] a description in series, and is arranged. By drawing 2, in order to explain easily, where the disks 10 and 11 are detached, it is shown, and it develops and shows the disk 12 so that the form of the grooved passage formed in the opposed face may be known. Suppose the field of the upstream in each disk that the surface and the field of the downstream are called a rear face in the following explanation.

[0028]The disk 10 is usually constituted by the wear resistance member (about 5–15 mm in diameter, and about 1.5–5 mm in thickness), and the introductory penetration holes 10a and 10b are formed in two on a concentric circle at this disk 10. 10 d of scroll chambers which consist of a cylinder-like-object-with-base-like crevice about 0.05 mm deep are formed in the central part of the rear face 10c of this disk 10.

[0029]Exit part 10b' of the exit part 10a' of the above-mentioned introductory penetration hole 10a, 10d of scroll chambers, and the introductory penetration hole 10b is opened for free passage by the grooved introduction passages 10e and 10f in the shape of an S character. Namely, the grooved introduction passage 10e is formed so that it may extend and curve from the marginal part of 10 d of scroll chambers to the tangential adjusting, Counter current A' which is formed so that it may curve as the starting point, and flows through the position where 10 f of grooved introduction passages counter a diametral direction to the above-mentioned marginal part of 10 d of scroll chambers similarly toward 10 d of scroll chambers by such composition, and B' are formed.

[0030]The disk 11 consists of a path almost comparable as the above-mentioned disk 10, thickness, and construction material, and the Kan Nakama through-hole 11a which has a larger cross-sectional area than the cross-sectional area of the grooved introduction passage 10e is formed in 10 d of scroll chambers, and a corresponding position.

[0031]The disk 12 consists of a path almost comparable as the above-mentioned disk 10, thickness, and construction material, the eccrisis penetration holes 12a and 12b are formed in two on a concentric circle, and the stagnation room 12d which consists of a cylinder-like-object-with-base-like crevice is formed in the central part. The inlet sections 12a' and 12b' and the stagnation room 12d of these eccrisis penetration holes 12a and 12b are opened for free passage by the grooved ejection passages 12e and 12f in the shape of an S character. These grooved ejection passages 12e and 12f are formed to the direction of a swirl for Masakata (the shape of i.e., a reverse S character) (seeing from the downstream of the flow of a processed liquid), thereby, turn the flow of the swirl style C to the periphery of the disk 12, and change it, and they attenuate whirling force.

[0032]And the grooved introduction passage 10e of the disk 10 and the flow rate of the processed liquid which flows through the inside of 10f can be set as a desired value by adjusting the path of the Kan Nakama through-hole 11a formed in the disk 11.

[0033]If the operation in the case of performing the atomization of suspension, and the elution and extraction of an active ingredient containing the department mushroom of the agaric using the atomizing unit 8 which has such composition is explained, If the inside of the atomizing unit 8 is introduced, [ the processed liquid (suspension of the department mushroom of the agaric) which was pressurized by the high pressure pumping 7 and used as ultra high-speed fluid ] [ inside ] After a

processed liquid flows within the cylindrical cup 9 first and branches to A and B, the introductory penetration holes 10a and 10b are passed, it collides with the opposed face of the disk 11, subsequently a flow direction is compulsorily changed into the center of the disk 10 in the grooved introduction passages 10e and 10f, and it serves as a counter current of flow A' and B'.

[0034] Into the scroll chamber 10d, the flow rate of a processed liquid is accelerated within this grooved introduction passage 10e and 10f, and counter 10 d of scroll chambers from the tangential adjusting of opposite *Perilla frutescens* (L.) Britton var. *crispa* (Thunb.) Decne., advance, and by that cause, Fluid A' and fluid B' generate the swirl style C, after joining and colliding within the scroll chamber 10d, the dispersoid in a processed liquid is microatomized in response to the energy of this unification and collision, and a vortex, and elution of an active ingredient is promoted.

[0035] The processed liquid which received atomization treatment within the scroll chamber 10d passes the Kan Nakama through-hole 11a, maintaining spiral voice after that, and is sent out in the disk 12 direction. If the cross-sectional area of the penetration hole 11a is formed more greatly than a grooved introduction passages [ 10e and 10f ] cross-sectional area at this time, since collision energy is released by the penetration hole 11a and wear of the liquid collision part in the disk 10, i.e., 10d of scroll-chambers inner circle wall, is suppressed, it is desirable.

[0036] After colliding with the stagnation room 12d of the disk 12 after that and receiving atomization treatment for the second time, the processed liquid sent out by spiral voice is shunted toward the grooved ejection passages 12e and 12f, a flow is changed in the direction which intersects perpendicularly with a pass, and spiral voice decreases it and it is discharged from the eccrasis penetration holes 12a and 12b.

[0037] Namely, if the wet jet mill provided with an atomization organization which was illustrated is used, By processing the department mushroom of the agaric by suspended state voice, the material concerned itself can be miniaturized remarkably, Intake efficiency is not only raised substantially, but elution of the active ingredient contained in this department mushroom of the agaric is promoted, and suspension turns into very stable dispersion liquid near colloid with atomization of a material. Since the cell is also efficiently crushed about the material which the specific surface area of the material concerned is substantially expanded with improvement of atomization, and a contact interval with an extracting solvent is raised remarkably, and has a cell, The elution to the solvent of the active ingredient contained in the department mushroom of the agaric is also accelerated, and it also becomes possible to extract an active ingredient efficiently extremely for a short time compared with the conventional sampling process.

[0038] Namely, if a wet jet mill and the wet jet mill provided with the atomizing unit of a type which was especially illustrated are used, compared with the case where the department mushroom of the agaric is microatomized with trituration and atomizing units including the conventional media type mill, the efficiency of trituration and atomization is markedly easy coming to be alike, and very stable atomization dispersion liquid are obtained by short-time treatment, and the extraction efficiency of an active ingredient is also raised by leaps and bounds.

[0039] In the above-mentioned example of a graphic display, in order to heighten the trituration / atomization effect further, the thing of the structure which forms a turning stream after a collision / unification was shown, but. It is also possible to carry out as [ perform / by this collision energy / form the grooved passages 10e, 10f, 12e, and 12f besides the above-mentioned example of a graphic display as a linear shape passage, make a processed liquid collide head-on by a counter current from each passage, and / trituration and atomization ]. Although the example of a graphic display showed the example which turns to a central direction, provides two, and makes a grooved passage collide and join, or forms a turning stream further, it is effective to form these three or more grooved passages, and to also make it collide and join from three or more directions.

[0040] about 10 or more MPa of process pressure [ about 50 or more MPa of ] desirable when demonstrating more effectively the atomization effect by such a wet jet mill, a cell crushing effect, and the extraction effect are about 100 or more MPa still more preferably more preferably. in order

to demonstrate more certainly the miniaturized effect by a collision and unification of processed liquids, it is desirable to set more preferably the flow rate of the processed liquid at the time of this collision and unification to sec in not less than 200 m / still more preferably not less than 100 m/sec not less than 50 m/sec.

[0041]In this invention, all the materials and materials mainly used for edible or drink serve as a department mushroom of the agaric with a processing object, That etc. by which compound addition of various Chinese orthodox medicine, or the thing which all substances, such as various materials for health food and extractives from them, were contained in addition to this, and refined separately, or was compounded depending on the case and also other components was carried out are included.

[0042]Specifically as a department mushroom of the agaric, agaric, Agaricus blazei, a brown mushroom, a mushroom, etc. are fried.

[0043]The educt etc. of extractives, such as not only the mushroom itself raised above but champignon extractives, or others are raised, and the subject in particular is not restricted.

[0044][ the utilizing method of the atomization thing of the department mushroom of the agaric, or an educt in this invention ] Although there is no special restriction in the directions for use, such as use as the main material or additive of various food instead of what is restricted to the use as health food, the flexibility of the use as health food is the highest, and it can be broadly used as Chinese orthodox medicine or common health food, a health drink, etc.

[0045]The treating material obtained by this invention is liquefied (). [ these / micro-disperse liquid, an emulsion, or ] [ an insoluble matter ] [ remove and ] Can use as health food, such as solution which extracted soluble extractives, and also. Provide as a concentrate, dilute, and make it present drink, or as occasion demands Other crude drug ingredients and sweeteners, Of course, it is also possible to be able to mix perfume, a refrigerant, etc., to be able to provide as a health drink, and also to grind a liquid object by arbitrary means, such as spray drying, vacuum drying, flush drying, and lyophilization, to consider it as powdered crude drugs, or to provide for a commercial scene as granular, a tablet, a capsule, etc.

[0046]And if this invention is utilized, the active ingredient of department mushrooms of the agaric, such as Agaricus blazei, can be used very effectively, and it will become possible to raise remarkably the operation as carcinostatic galenicals which Agaricus blazei has so that it may clarify also in the after-mentioned working example.

[0047]It is thought that the above-mentioned operation effect of this invention is brought about by miniaturizing a processed material remarkably, and, [ such a operation effect ] An impact pulverizer which was previously listed except when a wet jet mill which was mentioned above was used, Even when a dry type jet mill, a grinding-down-by-friction type mill, a media type mill, a freeze crusher, etc. are used, about 50 micrometers or less will be considered that the same effect is acquired by a median system, if it can carry out detailed to about 10 micrometers or less more preferably.

[0048]

[Working example]Next, although an working example is given and this invention is explained more concretely, this invention does not receive restriction according to the following working example from the first. That it is with a "part" and "%" in the following means a "weight section" and "weight %", unless it mentions specially.

[0049]As a shown grinding-down-by-friction type mill, "TK auto gay mixer" by a special opportunity-ized industrial company was used as a comparative example as the "mass colloider" by MASUKO SANGYO CO., LTD., and a high-speed-stirring type emulsion machine.

[0050]As a wet jet mill, "JINASU PY PR02-15" made from JINASU was used in the place in which this invention persons experimented. [ most effective ] As a mill used for sample creation, the "bantamweight division mill" by the Tokyo atomizer company was used.

[0051]The obtained particle diameter measurement and the valuation method of the atomization thing of the department mushroom of the agaric or cell debris were performed in quest of the path

(median size), the diameter of 10%, and the diameter of 90% using "laser type size distribution measuring device SALD-2000A" by Shimadzu 50%.

[0052] About cell granular type voice, 250 times as many photomicrographs were taken using the product made from high ROKKUSU "micro high-speed-steel Co-op system KH-2200MD<sub>3</sub>", and granular type voice was evaluated visually. The number of the spallation cell which exists a cell crushing rate in the microscopic field, and uncrushed cells was counted, and percentage estimated the spallation cell number to a total cell count.

[0053] Component evaluation requested measurement for a part for a part for the total lipid, and whole protein, and the carbohydrates from Japan Food Research Laboratories.

[0054] Experiment 1 [an atomization experiment of the Agaricus blazei fruit body dry article]

(1) Use materials : they are use (2) JINASU PY and a sample for mass colloider treatment about the Agaricus blazei fruit body dry article. : It is a mill (bantamweight division mill) about the above-mentioned dry Agaricus blazei fruit body.

Powder:20% purified water which was boiled and was ground more : 80% (3) reserve operation: Mix to purified water respectively as specified quantity \*\*\*\*\*\*, stir the dry Agaricus blazei powder ground to the weighed purified water, and create the suspension of dry Agaricus blazei powder.

(4), [ the dry Agaricus blazei powder suspension (the Agaricus blazei suspension is called henceforth) created by the experiment operation (4-1) above (3) ] After performing 3pass treatment using a wet jet mill [product "JINASU PY PR02-15" made by JINASU] by 30MPa (the flow rate in a collision merging section : 140 m/(sec)), 3pass treatment was performed by 150MPa (the flow rate in a collision merging section : 290 m/(sec)).

(4-2) The Agaricus blazei suspension created above (3) was processed by clearance being 100 micrometers by E46 \*\* type grinder using [the "mass colloider" by MASUKO SANGYO CO., LTD.]

[0055][ the working example of this invention which a result is as being shown in Table 1, has, and microatomized on condition of 150MPa (the flow rate in a collision merging section : 290 m/(sec)) using the wet jet mill ] Compared with the comparative example which not only the thing using an atomizer but also a grinding-down-by-friction type mill used, it turns out that particle diameter can be microatomized or less to 1/2 to 1/10 with the median size in particle-size-distribution measurement.

[0056] When a cell crushing rate is also processed with a wet jet mill, it is possible to crush 100% of cell, and it turns out that dramatically efficient atomization is performed compared with a comparative example.

[0057]

[Table 1]

処理条件	メジアン径	10%径	90%径	細胞破碎率
アマイー 粉碎品	98. 8	29. 3	287. 3	2
マスコイー処理品	47. 6	10. 6	125. 7	29
ジーナス処理品 30Mpa-3pass (140m/sec)	30. 1	7. 32	97. 4	46
ジーナス処理品 150Mpa-3pass (290m/sec)	9. 36	3. 42	33. 7	100

\* 表1中データ単位は、μm，細胞破碎率は %  
処理条件の下に括弧書きで記載したのは、衝突合流部における  
流速を表わす。

[0058] Experiment 2 [a component extraction experiment in Agaricus blazei]

Sample : (1) In the experiment 1. Mass colloider row JINASU 150MPa treatment. Atomization suspension (2) dry operation of Agaricus blazei in which (flow-rate:290m/sec in a collision merging section) was performed: Each suspension obtained above (1) was dried at the drying temperature of 200 \*\* with the spray dryer ("L-8 type spray dryer" by the Ogawara chemical engineering machine company), respectively.

A result is shown in the following table 2.

[0059]

[Table 2]

含有成分測定結果 [%] (ただし、乾燥粉体換算とする)

試料種別 (処理条件)	総脂質分	総タンパク質分	糖質分
マスコイダー処理品	0. 7 6	1 3. 8	1 0. 6
ジナス処理30MPa (140m/sec)	1. 5 3	1 9. 9	1 8. 7
ジナス処理150MPa(290m/sec)	3. 5 1	4 1. 1	4 0. 2

[0060]When it microatomizes by JINASU PY so that clearly also from the above-mentioned table 2, since efficiency of atomization and cell spallation can also be performed completely, the extraction rate is dramatically excellent in extraction efficiency highly in all components. When it combines with particle diameter evaluation of the aforementioned experiment 1 and thinks, [ particle size evaluation ] almost comparable as a treatment article using the Masco rider who is a grinding-down-by-friction type mill, and a thing processed using JINASU PY by 30MPa (the flow rate in a collision merging section : 140 m/(sec)) -- nevertheless, if component extraction evaluation is compared, latter one boils the figure markedly and is excellent.

The prepotency of treatment using a wet jet mill can be checked.

[0061]Experiment 3: [an anticancer operation experiment at the time of using Agaricus blazei by a mouse]

(1) Use specimen \*\* fruit body all \*\*\*\* : what was ground using the cutter mill after having carried out the dichotomy rate after carrying out backwashing by water of the fruit body which is a cultivation article, and drying with a chamber dryer for 70 \*\*x 12 hours.

\*\* Fruit body pulverizing article : what classified using the stainless steel screen of 100 micrometers of openings, and passed the screen after repeating and grinding further all the fruit body \*\*\*\* of above-mentioned \*\* by a cutter mill.

Fruit body cell spallation article : \*\* Weigh the fruit body pulverizing article obtained by above-mentioned \*\* so that it may become concentration 10% underwater, and the suspension is carried out underwater, What dried the suspension with the drying temperature of 200 \*\* with the spray dryer ("L-8 type spray dryer" by the Ogawara chemical engineering machine company) after performing 3pass treatment using JINASU PY (PR02-15) by 150MPa (the flow rate in a collision merging section : 290 m/(sec)).

\*\* Cultured-mycelium pulverizing article : what classified using the stainless steel screen of 100 micrometers of openings, and passed the screen after drying the Agaricus blazei cultured mycelium with a chamber dryer for 70 \*\*x 12 hours and grinding repeatedly using a cutter mill.

Cultured-mycelium cell spallation article : \*\* Weigh the cultured-mycelium pulverizing article obtained by above-mentioned \*\* so that it may become concentration 10% underwater, and the suspension is carried out underwater, What dried the suspension with the drying temperature of 200 \*\* with the spray dryer ("L-8 type spray dryer" by the Ogawara chemical engineering machine company) after performing 3pass treatment using JINASU PY (PR02-15) by 150MPa (the flow rate in a collision merging section : 290 m/(sec)).

[0062](2) Anticancer examination contents : ten ICR/Slc system female mice of five weeks old were made into one group. After after-transplant 24 hours passed in this Sarcoma180 cancer cell ( $5 \times 10^6$  individual) extracted from the mouse on the 7th after the transplant, a fixed quantity (500 mg/kgx twice / day) of each specimen was administered orally to it with the stomach tube for 20 days – evening twice every day in the morning.

[0063]The size ( $\text{cm}^3$ ,  $4/3\pi a^2 b/2$ , a:minor axis, b: major axis) of cancer was measured 21 days after the transplant, and cancer suppression rate [%] = (1 – traveler's check)  $\times 100$  was computed as compared with the control group. However, the size of the cancer of T:specimen medication group, C: Express the size of the cancer of the control group. The cancer perfect disappearance rate [%] in the 25th day of a transplant and the probability of survival of the mouse were compared with the control group. A result is shown in Table 3.

[0064]

[Table 3]

検体	癌体積 [cm <sup>3</sup> ]	癌抑制率[%] 移植後21日	癌完全消失率 移植25日後	生存率 移植25日後	図番
対照群	28.9 ± 7.6	0	0/10	1/10	
検体①	3.8 ± 1.5	86.9	4/10	10/10	図3
検体②	2.6 ± 1.7	91.0	5/10	10/10	図4
検体③	1.4 ± 0.9	95.2	7/10	10/10	図5
検体④	2.4 ± 1.0	91.7	4/10	10/10	図6
検体⑤	0.9 ± 0.4	96.9	6/10	10/10	図7

検体①：子実体全粉品

検体②：子実体微粉碎品

検体③：子実体細胞破碎品

検体④：培養菌糸体微粉碎品

検体⑤：培養菌糸体細胞破碎品

[0065]The analysis result of the anticancer test objective group shown in drawing 3 of Table 3 – 7 is as follows.

Drawing 3: the effect (25 days after a cancer transplant) over 180 SARUKO marl type cancer upper row: (Control) — control-group results: — one example survives among ten examples.

lower-berth: — Agaricus blazei fruit body medication group results: — ten examples are survival among ten examples. 40% of a cancer disappearance rate, 86.9% of a cancer suppression rate.

Drawing 4: the effect (25 days after a cancer transplant) over 180 SARUKO marl type cancer

upper row: (Control) — control-group results: — one example survives among ten examples.

lower-berth: — Agaricus blazei fruit body pulverizing article medication group results: — ten examples are survival among ten examples. 50% of a cancer disappearance rate, 91.0% of a cancer suppression rate.

Drawing 5: the effect (25 days after a cancer transplant) over 180 SARUKO marl type cancer

upper row: (Control) — control-group results: — one example survives among ten examples.

lower-berth: — Agaricus blazei fruit body cell-wall spallation article medication group results: — ten examples are survival among ten examples. 70% of a cancer disappearance rate, 95.2% of a cancer suppression rate.

Drawing 6: the effect (25 days after a cancer transplant) over 180 SARUKO marl type cancer

upper row: (Control) — control-group results: — one example survives among ten examples.

lower-berth: — Agaricus blazei cultured-mycelium pulverizing article medication group results: — ten examples are survival among ten examples. 40% of a cancer disappearance rate, 91.7% of a

cancer suppression rate.

Drawing 7: the effect (25 days after a cancer transplant) over 180 SARUKO marl type cancer upper row: (Control) — control-group results: — one example survives among ten examples. lower-berth: — Agaricus blazei cultured-mycelium cell-wall spallation article medication group results: — ten examples are survival among ten examples. 60% of a cancer disappearance rate, 96.9% of a cancer suppression rate.

[0066]As for the anticancer activity over mouse Sarcoma 180 solid cancer, the strong effect accompanied by full elimination of cancer was observed in 40–50% of mouse in the internal use experiment of Agaricus blazei fruit body all \*\*\*\*\*, the Agaricus blazei fruit body pulverizing article, and the Agaricus blazei cultured-mycelium pulverizing article so that clearly also from Table 3. The internal use group of the Agaricus blazei fruit body cell spallation article and the Agaricus blazei cultured-mycelium cell spallation article showed remarkable anticancer activity, and full elimination of cancer was observed in 60–70% of mouse.

[0067]

[Effect of the Invention]As explained above, a wet jet mill is used in this invention.

Therefore, a department mushroom of the agaric can be microatomized very efficiently by short-time treatment.

About the material which atomization can carry out homogeneously efficient again and has a cell, it can advance to cell spallation, and it becomes possible to raise the extraction rate of an active ingredient by leaps and bounds in connection with it. According to this invention, it becomes possible to raise further the anticancer activity which the department mushroom of the agaric originally had with atomization of the department mushroom of the agaric.

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[Translation done.]